

REPORT DOCUMENTATION PAGE

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14. ABSTRACT The Society for Industrial and Applied Mathematics hosted the Tenth International Conference on Numerical Combustion held May 9-12, 2004 in Sedona, Arizona. This distinguished conference series began in 1985 in Sophia Antipolis, France and was followed by conferences in San Francisco, California (1987), Juan Ies Pins, France (1989), St. Petersburg Beach, Florida (1991), Garmisch, Germany (1993), New Orleans, Louisiana (1996), York, England (1998), Amelia Island Florida (2000), and Sorrento, Italy (2002). SIAM is widely recognized as the originator and the U.S. anchor of this important meeting whose topics concerns the applied mathematics and computation associated with combustion and reactive flow. In particular, the International Numerical Combustion Symposiums have become one of the international major venues for research on direct simulation and modeling turbulent reacting flow. It is also one of the major international venues for theoretical work in reacting flows.					
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Tenth SIAM International Conference on Numerical Combustion
May 9-12, 2004
Sedona, Arizona.

Final Technical Report

The Society for Industrial and Applied Mathematics hosted the Tenth International Conference on Numerical Combustion May 9-12, 2004 in Sedona, Arizona. This distinguished conference series began in 1985 in Sophia Antipolis, France and was followed by conferences in San Francisco, California (1987), Juan les Pins, France (1989), St. Petersburg Beach, Florida (1991), Garmisch, Germany (1993), New Orleans, Louisiana (1996), York, England (1998), Amelia Island, Florida (2000), and Sorrento, Italy (2002). SIAM is widely recognized as the originator and the U.S. anchor of this important meeting whose topics concern the applied mathematics and computation associated with combustion and chemically reactive flow. In particular, the International Numerical Combustion Symposia have become one of the major international venues for research on the development and application of numerical methods to problems in laminar and turbulent reacting flow. It is also one of the major international venues for theoretical work in reacting systems.

This meeting drew approximately 141 participants from 9 countries whose research included topics in turbulence, kinetics, detonation, flames, pollution, microgravity, micro-combustion, ignition, applications of parallel processing, tera-scale computation of combustion applications, material synthesis, droplets and sprays, heterogeneous combustion, energetic materials (propellants and explosives), engine and furnace combustion, fires, numerical methods and, software engineering for combustion applications.

The program consisted of 3 plenary presentations, 8 minisymposia, 16 contributed sessions, and a poster session with a total of 131 speakers and presenters.

The three plenary talks were:

“Simulation of Heterogeneous Solid Propellant Combustion”
Thomas Jackson, University of Illinois

“Adaptive Methods for Laminar Flames”
Malte Braack, University of Heidelberg, Germany

"Numerical Modeling Soot Particle Formation"
Michael Frenklach, University of California, Berkeley,

The 8 minisymposium topics and organizers were:

"Combustion Processes in Astrophysics"
Organizers: Alexei Khokhlov, University of Chicago and Elaine S. Oran, Naval Research Laboratory

"Numerical Modelling of Microscale Combustion"
Organizer: Paul Ronney, University of Southern California

"Low Mach Number Combustion: Approaches and Applications - Part I and II"
Organizer: Joseph F. Grcar, Lawrence Berkeley National Laboratory

"Numerical Studies of Reactive Flow using Adaptive Mesh Refinement"
Organizer: Donald W. Schwendeman, Rensselaer Polytechnic Institute

"Mathematical Analysis of Detonation Problems"
Organizer: David Wagner, University of Houston

"Simulation and Modeling of Homogeneous Charge Compression Ignition Combustion"
Organizer: Jacqueline H. Chen, Sandia National Laboratories

"Eulerian Methods for the Accurate Treatment of Polydisperse Evaporating Sprays"
Organizer: Marc Massot, CNRS, France

The 16 contributed sessions were entitled:

Turbulence I, Chair: Stewart Cant, University of Cambridge, United Kingdom

Laminar Flames, Chair: Beth Anne V. Bennett, Yale University

Engines, Chair: Werner J. Dahm, University of Michigan

Turbulence II, Chair: Kuldeep Prasad, National Institute of Standards and Technology

Detonations, Supernova, Chair: Kevin Zumbrun, Indiana University

Numerical Strategies, Chair: Ulrich Maas, Karlsruhe University, Germany

Turbulence III, Chair: Evatt R. Hawkes, Sandia National Laboratories

Detonations, Chair: Bradley L. Wescott, University of Illinois, Urbana-Champaign

Turbulence IV, Chair: Hong G. Im, University of Michigan

Modeling, Chair: Omke J. Teerling, University of Leeds, United Kingdom

Turbulence V, Chair: Venkatramanan Raman, Stanford University

Laminar Flames, Detailed Chemistry, Chair: Vincent Giovangigli, École Polytechnique, France

Turbulence VI, Chair: William G. Houf, Sandia National Laboratories

Laminar Flames, Sprays, Chair: William Sirignano, University of California, Irvine

Front Tracking-Surface Evolution, Energetic Materials, Chair: Joseph M. Powers, University of Notre Dame

Combustion, Chair: Andrea Frisque, University of British Columbia, Canada.

On Tuesday afternoon a number of attendees participated in an excursion to the Grand Canyon that included dinner in one of the local lodges followed by several hours of sightseeing culminating in an exquisite sunset. It was deemed very successful by the participants. The Steering Committee announced that they are planning to hold the next International meeting in Spain in 2006, and the next US meeting would be in Monterey, CA in 2008 (as suggested by the SIAM staff). The accommodations in Sedona were excellent and the meeting was deemed a great success by the participants. The US meetings hosted by SIAM are seen as attractive events and are highly valued by the combustion community. The cooperation and professional help and efficiency of the SIAM staff and organization were in large part responsible for the success of this meeting and are greatly appreciated. The co-chairs (Buckmaster, Smooke and Stewart) were delighted to work with SIAM and enjoyed organizing this meeting.

Respectfully submitted,

Co-chairs: John D. Buckmaster, Mitchell Smooke and D. Scott Stewart